

REMARKS

The Examiner's time and attention during the phone interview held on Friday, October 14 at 9:30 a.m. CST is greatly appreciated and acknowledged. Applicants argued the prior art provides no motivation to combine the prior art references to reach the limitations of Applicant's claims. The motivation to combine is lacking because one skilled in the art would not see a benefit of combining the features of at least one of the cited references into the environment of the other references. Additionally, the Applicants argued that, in either the environments of the prior art or the environment of the present invention, the washer claims of the present invention would not "strengthen" the bolt head or the bolt itself. The Examiner agreed to give careful attention to the arguments and to review them with his supervisor.

This Amendment is in response to the June 1, 2007 Office Action. Applicant has amended independent claim 23 to incorporate the limitations of dependent claims 24 and 29. Additionally, new claim 36 has been added. These amendments together with the arguments presented below overcome the Examiner's rejections. Accordingly, Applicant respectfully requests that the rejections be withdrawn and the claims be allowed.

The Examiner rejected claims 23, 26, 27 and 32-35 under 35 U.S.C. 103(a) as being unpatentable over Ratte et al. (U.S. Patent No. 6,902,095 B2) in view of Williamson et al. (U.S. Patent No. 5,533,764). Next, the Examiner rejected claim 31 under 35 U.S.C. 103(a) as being unpatentable over Ratte and Williamson as applied to claim 26 and further in view of Landgrebe (U.S. Patent No. 5,704,749). Additionally, the Examiner rejected claims 24, 25, 29 and 30 under 35 U.S.C. 103(a) as being unpatentable over Ratte and Williamson as applied to claim 23 and further in view of Whitney (U.S. Patent No. 2,353,531). Finally, the Examiner rejected claim 28 under 35 U.S.C. 103(a) as being unpatentable over Ratte in view of Williamson and Whitney, as

applied to claim 24 above, and further in view of Lohr (U.S. Pub. No. 2003/0215302 A1). The Applicant traverses the rejections and submits the following:

Rejections under 35 U.S.C. §103(a)

Claims 24, 25, 29 and 30

The Examiner rejected claims 24, 25, 29 and 30 under 35 U.S.C. 103(a) as being unpatentable over Ratte and Williamson as applied to claim 23 and further in view of Whitney (U.S. Patent No. 2,353,531). Independent claim 23 has been amended to incorporate the limitations of now canceled claims 24 and 29. Examiner states that Whitney teaches an integral washer 11 ... which includes projections 12, and also wherein the washer is regarded as having semi-circular projections below the head flats as seen in figure 1. Examiner then claims it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a washer with the bolt head of Ratte as modified by Williamson in view of Whitney, the *“motivation being to strengthen the bolt head of Ratte as modified by Williamson”*.

Respectfully, the Examiner misunderstands the purpose and function of the integral washer and its radial projections in Whitney, the principal function and mechanics of washers in a general sense as they are known in the art, and lastly, the function and mechanics of the “washer” as it is referred to in the inventor’s patent application. All three of these have very different purposes and operational mechanics, none of which strengthen the bolt head as stated by the examiner. As such, there would be no motivation to combine any of the prior references to solve the problem addressed in the current application.

First, the Examiner misreads the teachings of Whitney. Whitney does not teach an “integral washer 11.” Feature 11 in Whitney is not a washer at all; rather it is specifically stated

as being an “enlarged flange having a plurality of vertical ribs 12 throughout the periphery thereof.” (see Whitney col. 1, lines 44-51). This flange 11 is very different in purpose and function than the “washer 18” detailed in Whitney (see Whitney col. 2, lines 20-27). Whitney also teaches that the flange 11 has on its undersurface a plurality of horizontal radial ribs 13, which are in alignment with the vertical ribs 12. However, nowhere in the specification of Whitney does it teach that these ribs 11 and 12 serve to prevent rotation of the mated screw or in any way make the screw or screw head “stronger.” Rather, Whitney specifically teaches that these ribs serve only “to provide a series of angular self-cleaning grooves around the entire periphery of the base of said flange” 11. (see Whitney col.1, line 51 – col. 2, line 2). These grooves additionally serve to hold lubricant to make removal of the screw *easier* by allowing the screw to rotate easier. (see Whitney col. 2, lines 14-19). This is actually the opposite intention of the radial projections utilized by the Inventor in the instant invention and actually teaches away from the goals of the Inventor’s invention. Accordingly, Whitney does not teach a “washer” having radial projections to prevent rotation of a bolt, nor does it teach that such projections would strengthen a screw or bolt head. Therefore, there would be no motivation to combine the teachings of Whitney with any of the prior art because the teachings of Whitney would not be expected to provide any benefit to the problem addressed by the Inventor.

Second, when a bolt and nut are traditionally tightened to mate two components together (“the work piece”), the head of the bolt and the mated nut place a compressive load on the work piece sandwiched there between. A washer is normally placed between the bolt head and the work piece, or the nut and the work piece, in order to utilize the large surface areas on the top and bottom faces of the washer to distribute that compressive load placed on the work piece over a larger surface area than that available on the bottom face of the bolt head alone. This, in turn,

reduces contact stresses on the work piece and can thus reduce relaxation or deformation of the work piece under load. However, this is not the environment within which the Inventor's bolt head and "washer" operate, and accordingly, the mechanics of how the Inventor's "washer" functions are completely different than those of washers known in the art. In the traditional use of washers as they are known in the art, the circumferential side face of the washer provides no benefit to distributing axial loads or preventing axial rotation due to high torque because the side surface of the washer does not act against anything on the work piece. It is open to air. Accordingly, one skilled in the art would not look to use a washer in the environment in which the Inventor's bolt head and "washer" is being used, completely encased in lead, because the side faces of traditional washers known in the art do not provide any benefit in the environment in which they are normally used, nor would they be expected to do so in an environment in which they are encased in lead.

Furthermore, the problem solved by using washers in a normal environment is not a problem faced by the Applicant. The problem addressed by the Applicant, as is stated in the specification (see paragraph 4 in "BACKGROUND OF INVENTION" in the specification), is one in which the six circumferential side faces of the hexagonal shaped bolt head, when fully encased in a lead environment, are the primary means of preventing the bolt from rotating axially within its lead casting when a nut is overtorqued onto the exposed end of the battery terminal. The problem addressed by the Applicant is specifically related to preventing axial rotation of a bolt head encased in lead when placed under high axial torque at its free end, rather than the being related to linear compressive forces on a work piece as addressed by washers known in the art. The environments in which these two operate are completely different and incomparable. In the environment of the Applicant's invention, the circumferential side faces and associated axial

edges of both the bolt head and “washer” provide resistance to axial rotation by transferring the torsional forces to the surrounding lead when an axial torque is applied to the threaded free end of the bolt. By providing a bolt head having a “washer” with radial projections, in which lead may occupy the space between these projections, the inventor has increased the circumferential side surface area that contacts the lead and thus the ability of the bolt encased in lead to resist axial rotation and withstand high torque loads. Such a mechanism is not useful in the traditional environment known in the art.

Third, the Examiner has previously stated that washers make the bolt or bolt head “stronger.” Applicants respectfully disagree. Washers being used in either of the environments, traditional or encased in lead, do not in any way “strengthen the bolt head,” regardless of the shape. As stated previously, traditional washers serve to distribute load over larger surface areas, but that does not however increase the strength of the bolt head. The Applicant’s “washer” in the present invention serves to prevent rotation by utilizing the additional surface area created by the circumferential side faces of the radial projections in order to distribute the torque placed on the bolt. Again however, it does not make the bolt head stronger. Therefore, because of the very different environments in which traditional washers and the “washer” of the present invention operate as well as the very different mechanics of how they serve their function and the problem that each solves, there would be no motivation to combine the teachings of the prior art cited by the examiner for use in the environment or manner contemplated by the Applicant in the present invention.

Accordingly, since there is no motivation to combine the prior art references cited by the Examiner, the claims should be allowed.

Claims 23, 26, 27 & 32-35

The Examiner also rejected claims 23, 26, 27 and 32-35 under 35 U.S.C. 103(a) as being unpatentable over Ratte et al. (U.S. Patent No. 6,902,095 B2) and further in view of Williamson et al. (U.S. Patent No. 5,533,764). With regard to the sealing portion of claim 23, Applicant respectfully disagrees with the Examiner in that the claim limitations drawn to the sealing portion are not process limitations. The tapered sealing portion and its limitations are physical limitations on the article itself. Moreover, in the prior art of Ratte, one skilled in the art would not have been faced with a leakage problem, so one skilled in the art would not need a sealing portion as it would provide any benefit in the environment of Ratte. Accordingly, there would be no motivation to combine the teachings of Williamson with the environment and the teachings of Ratte. Additionally, a lead casting as in the Applicant's invention is not identical to the cold formed lead portion taught by Ratte. The physical configuration is different because the configuration of the casting reflects the configuration of the mold including any leaks, which would not be relevant with a cold formed lead body such as that which is taught in Ratte. Furthermore, applicant has amended independent claim 23 to incorporate the limitations of now canceled dependent claims 24 and 29 therein. Accordingly, as discussed above, since there is no motivation to combine the prior art references cited by the Examiner to reach the limitations of independent claim 23, independent claim 23 and its remaining dependent claims should be allowed.

Claim 31

The Examiner also rejected claim 31 under 35 U.S.C. 103(a) as being unpatentable over Ratte and Williamson as applied to claim 26 and further in view of Landgrebe (U.S. Patent No.

5,704,749). First, the Applicant respectfully submits that he does not know to what the Examiner is referring when he discusses the “tapered 432 abutment of Ratte” as there is no element 432 in Ratte. Furthermore, Applicant respectfully disagrees with the Examiner that it would have been obvious “to modify the tapered abutment 432 of Ratte et al. as modified by Williamson such that the tapered portion 432 abuts a planar surface of a recessed portion of the nut 303, in view of the teachings of Langrebe, the motivation being to prevent over-torquing of the bolt 409.” In the Applicant’s invention the tapered surface has nothing to do with preventing overtightening of the bolt and does not function to do so. Accordingly, the Examiner has assigned a specific function or purpose to a feature of Applicant’s invention, which that feature is not intended to serve. Therefore, the motivation to combine references cited by Examiner has been overcome because the Examiner misread the purpose and function of the tapered surface of Applicant’s invention. Additionally, Applicant has amended independent claim 23 to incorporate the limitations of now canceled dependent claims 24 and 29 therein. Accordingly, as discussed above, since there is no motivation to combine the prior art references cited by the Examiner to reach the limitations of independent claim 23, independent claim 23 and its remaining dependent claims should be allowed. Therefore, the rejection should be withdrawn and the claim allowed.

Claim 28

The Examiner also rejected claim 28 under 35 U.S.C. 103(a) as being unpatentable over Ratte in view of Williamson and Whitney, as applied to claim 24 above, and further in view of Lohr (U.S. Pub. No. 2003/0215302 A1). Applicant has amended independent claim 23 to incorporate the limitations of now canceled dependent claims 24 and 29 therein. Accordingly, as

discussed above, since there is no motivation to combine the prior art references cited by the Examiner to reach the limitations of independent claim 23, independent claim 23 and its remaining dependent claims should be allowed.

Conclusion

For the foregoing reasons, Applicant respectfully submits that the pending claims (23 – 36) are in condition for allowance and request that the Examiner issue a notice to that effect. The Office is authorized to charge all fees, if any, associated with this correspondence to Deposit Account No. 13-0019.

Respectfully submitted,

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